REMARKS

In the Office Action, the Examiner objected to claims 23-33 and 46-56 and rejected claims 1-22 and 34-45. Reconsideration of the application in view of the remarks set forth below is respectfully requested.

Rejections under 35 U.S.C. § 103

The Examiner rejected claims 1-22 and 34-45 under 35 U.S.C. § 103(a) as being unpatentable over Guthrie et al. (U.S. Pat. No. 5,784,576), in view of Bard et al. (U.S. Pat. No.6,604,152). The Examiner's rejection is too lengthy to be reproduced efficiently hereing. Nonetheless, Applicants respectfully traverse this rejection.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining or modifying the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination or modification. *See ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination or modification to render obvious a subsequent invention, there must be some reason for the combination or modification other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the

obviousness, of making the combination or modification. *See Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

The present application relates generally to memory systems and, more particularly, to redundant memory systems. Page 5, lines 3-4. One advantage of the presently described system is the ability to implement the described hot-plug procedures to remove, replace, upgrade and add semiconductor memory devices, such as dual inline memory modules (DIMMs), to a selected memory segment while the system remains operational (i.e., powered-on). Page 21, lines 9-12. To facilitate the hot-plugging capabilities, the memory segments are configured into individual memory cartridges, each including the number of semiconductor memory devices. Page 21, lines 12-14; Fig. 6. The hot-plug procedures described in the present application allow a user to remove a memory cartridge while the system remains operational. Page 39, lines 5-6. Further, the presently described system allows a user to replace individual semiconductor memory devices, such as the individual memory modules (DIMMs) while the system is still operational. Page 39, lines 6-7. The presently described system also allows for hot-add and hot-upgrade techniques. Page 40, lines 1-2. A hot-add procedure is the ability to add one or more banks of semiconductor memory devices, such as DIMMs, to empty sockets in the system that are currently operational in order to increase memory capacity using the hot-plug procedures described in the present application. Page 40, lines 2-4. A hot-upgrade procedure refers to the ability to replace an existing bank of semiconductor memory devices, such as DIMMs, with larger capacity semiconductor memory devices, while the memory devices are fully operational. Page 40, lines 4-6. Each of the present claims recite hot-plug methods for altering or increasing memory capacity in a computer system comprising a plurality of memory cartridges while the system is operational.

Specifically, claim 1 recites, in part, "powering-down one of the plurality of removable memory cartridges, while leaving the remaining memory cartridges operational," "inserting a semiconductor memory device in the one of the plurality of removable memory cartridges," and "powering-up the one of the plurality of removable memory cartridges." Applicants respectfully submit that neither of the references, alone or in combination, disclose each of the features recited in claim 1.

In the office action, the Examiner asserted that the Guthrie reference discloses adding and removing components into a data processing system, without powering the system down. The Examiner recognized that the Guthrie reference does not disclose hot-plugging a plurality of memory cartridges or memory devices. Thus, the Examiner cited the Bard reference as disclosing a memory cartridge. In summary, it appears that the Examiner is simply asserting that the Guthrie reference discloses hot-plugging a number of devices on a PCI bus and combining the system of Guthrie with the Bard reference to disclose that those devices are memory devices.

The Guthrie reference discloses a method and system for providing the ability to add and remove components of a data processing system without powering down the system. Abstract. More specifically, the Guthrie reference discloses techniques for hot-plugging devices on a PCI bus of a data processing system. In contrast to the hot-plug data processing system disclosed in the Guthrie reference, the Bard reference simply discloses a notebook computer 10 having a slot 11 into which a cartridge 12 containing data and/or programs may be inserted. Col. 1, lines 61-63. The cartridge 12 includes a memory 14 which stores configuration data. Col. 1, lines 66-67. As a preliminary matter, Applicants respectfully

traverse any assertion that one skilled in the art would be motivated to combine the techniques described in the hot-plug data processing system of Guthrie, with a notebook computer having an insertable cartridge that includes memory, as disclosed in the Bard reference. Indeed, those concerned with reading a cartridge inserted into a slot in a notebook computer, as disclosed in Bard, would not be motivated to apply any teachings related thereto with a system configured to receive hot plug components. Regardless, the cited references collectively do not disclose each of the features recited in claim 1. Thus claim 1 cannot be rendered obvious by those references. *See* M.P.E.P. § 2143.03.

As discussed above, it appears that the Examiner is asserting that the Guthrie reference discloses hot-plugging a number of devices on a PCI bus and is simply using the Bard reference to disclose that those devices are memory devices. However, the Examiner fails to properly cite those elements corresponding to the recited features. For instance, claim 1 recites powering-down one of the plurality of removable *memory cartridges*, inserting *a semiconductor memory device* into the one of the plurality of removable *memory cartridges*, and powering-up the one of the plurality of removable *memory cartridges*. Applicants respectfully assert that the neither of the references discloses powering down a memory cartridge and inserting a semiconductor memory device into the memory cartridge.

Applicant's traverse the Examiner's correlation of the cartridge 12 having a memory 14 which stores configuration data, as disclosed in Bard with a "memory cartridge." Clearly, the cartridge 12 is not a memory cartridge, even within the broadest interpretation of the terms. Regardless, at best, the Guthrie reference, hypothetically modified in view of the Bard reference, would simply provide for hot-plugging a cartridge that includes a memory into a computer system while the system is operational. However, the cited references do not

disclose powering down a memory cartridge and inserting a semiconductor memory device into the memory cartridge, and then powering the memory cartridge up. Because the cited references, even considered together, do not even disclose plugging a memory device into a memory cartridge in a computer system, the combination cannot possibly disclose that those memory cartridges are removable or that these acts are repeated until a semiconductor memory device has been inserted into all of the plurality of memory cartridges, as further recited in claim 1. To be clear, even considering the Examiner's contention that one skilled in the art would have been motivated to combine the cited references and even if the cartridge 12 having a memory 14 disclosed in the Bard reference could be hypothetically correlated with the recited removable memory cartridge, the cited references do not disclose powering down a memory cartridge *and* inserting a semiconductor memory device into the memory cartridge, before powering the memory cartridge up. Accordingly, the cited combination cannot possibly disclose all of the features recited in claim 1, and *prima facie* obviousness, meeting the requirements of M.P.E.P. § 2143.03 has not been established.

Similarly, claim 11 recites powering-down a first of the plurality of memory cartridges, inserting a first memory module into a connector on the first memory cartridge and powering-up the first of the plurality of memory cartridges. Claim 11 further recites similar steps for inserting memory modules into a second, third, fourth and fifth memory cartridge. Still further, claim 11 recites "initializing each of the memory modules," and "notifying the computer system that the memory modules are available for data storage."

As described above, neither of the references, either alone or together, disclose powering down a memory cartridge, inserting a memory module into the memory cartridge, and then powering up the memory cartridge, much less repeating these steps for five different

memory cartridges. As described above, at best the cited references collectively disclose hot-plugging a cartridge having a memory into a bus, not powering down a cartridge, inserting a memory device into the cartridge, and powering up the cartridge. Further, the cited references collectively does not disclose "initializing memory modules or notifying the system that the memory modules are available for data storage," as further recited in claim 11. Accordingly, the cited references cannot possibly disclose each of the elements as they are recited in claim 11, and *prima facie* obviousness, meeting the requirements of M.P.E.P. § 2143.03 has not been established.

Similarly, claim 34 recites a method of increasing memory capacity in a computer system comprising powering down a first of the plurality of memory cartridges, removing a first memory module from the first memory cartridge, inserting a replacement memory module into the first memory cartridge, wherein the replacement memory module has a higher memory capacity than the first memory module, and powering-up the first of the plurality of memory cartridges. Claim 34 further recites repeating these steps for each of five memory cartridges. Still further, claim 34 recites "initializing each of the memory modules," and "notifying the computer system that the memory modules are available for data storage." As described above, the cited references considered together do not even disclose powering down a memory cartridge, inserting a memory module into the memory cartridge, and powering-up the memory cartridge, much less removing a first memory module from the memory cartridge and replacing the memory module with a memory module having a higher memory capacity than the first memory module. Further, the cited references do not disclose repeating these acts for five separate memory cartridges each receiving a replacement memory module having a higher memory capacity than the memory module that was removed from the memory cartridge. Still further, the cited references collectively do not

disclose initializing the memory modules or notifying the computer system that the memory modules are available for data storage. For at least these reasons, Applicants respectfully submit that the cited references cannot possibly disclose each of the features recited in claim 34, and *prima facie* obviousness, meeting the requirements of M.P.E.P. § 2143.03 has not been established.

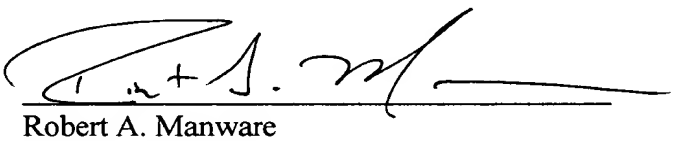
Because the cited references do not together disclose the features recited in independent claims 1, 11 and 34, Applicants respectfully submit that the cited references, taken alone or collectively, cannot possibly render the recited subject matter obvious, accordingly do not meet the requirements of M.P.E.P. §§ 2141 - 2143. Accordingly, Applicants respectfully request withdrawal of the Examiner's rejections and allowance of claims 1-56.

Conclusion

In view of the remarks set forth above, Applicants respectfully request reconsideration of the Examiner's rejections and allowance of all pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: July 19, 2004



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